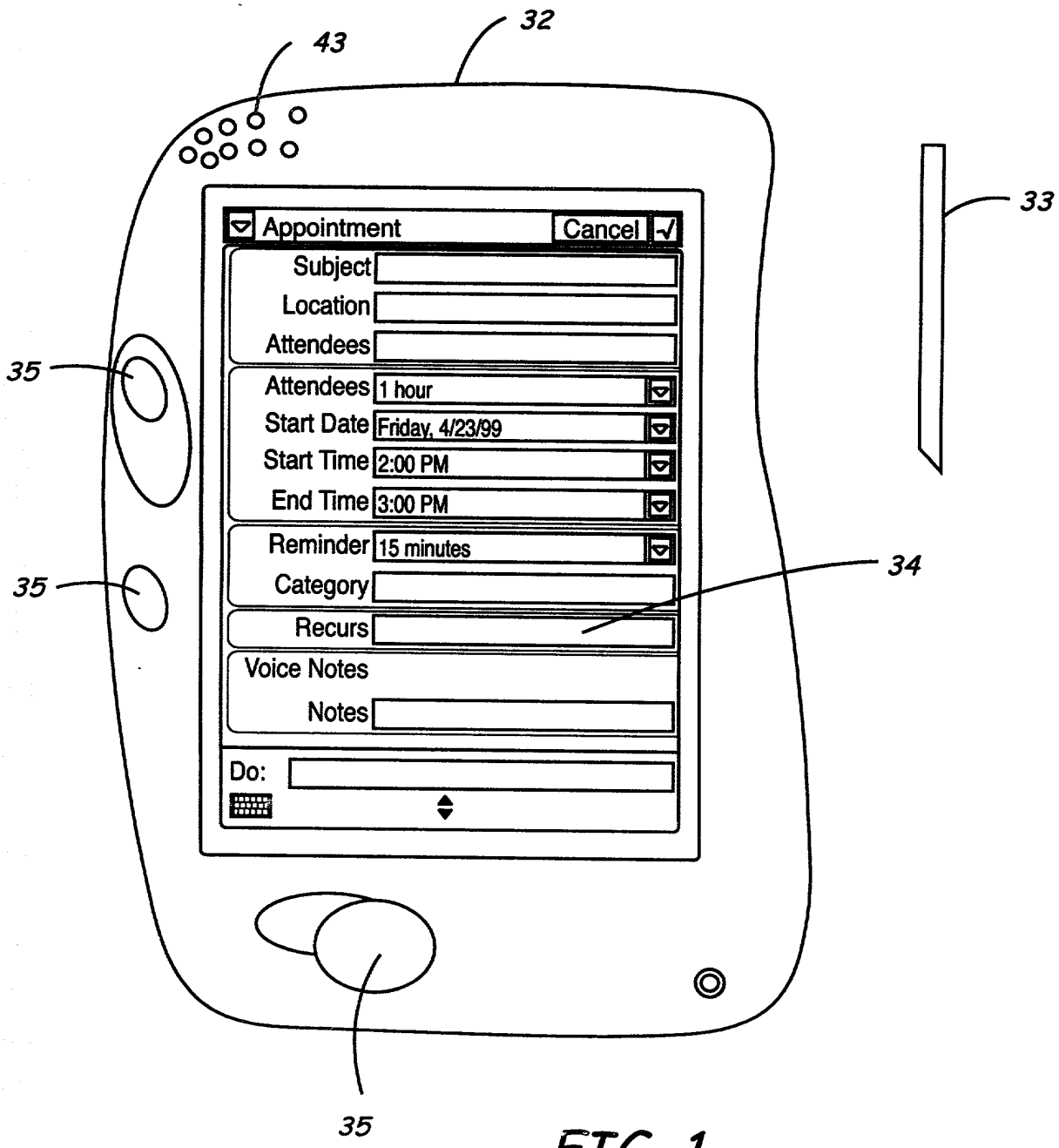

43
32
33
35
35
34
35
Appointment
Cancel
Subject
Location
Attendees
Attendees 1 hour
Start Date Friday, 4/23/99
Start Time 2:00 PM
End Time 3:00 PM
Reminder 15 minutes
Category
Recurs
Voice Notes
Notes
Do:

FIG. 1

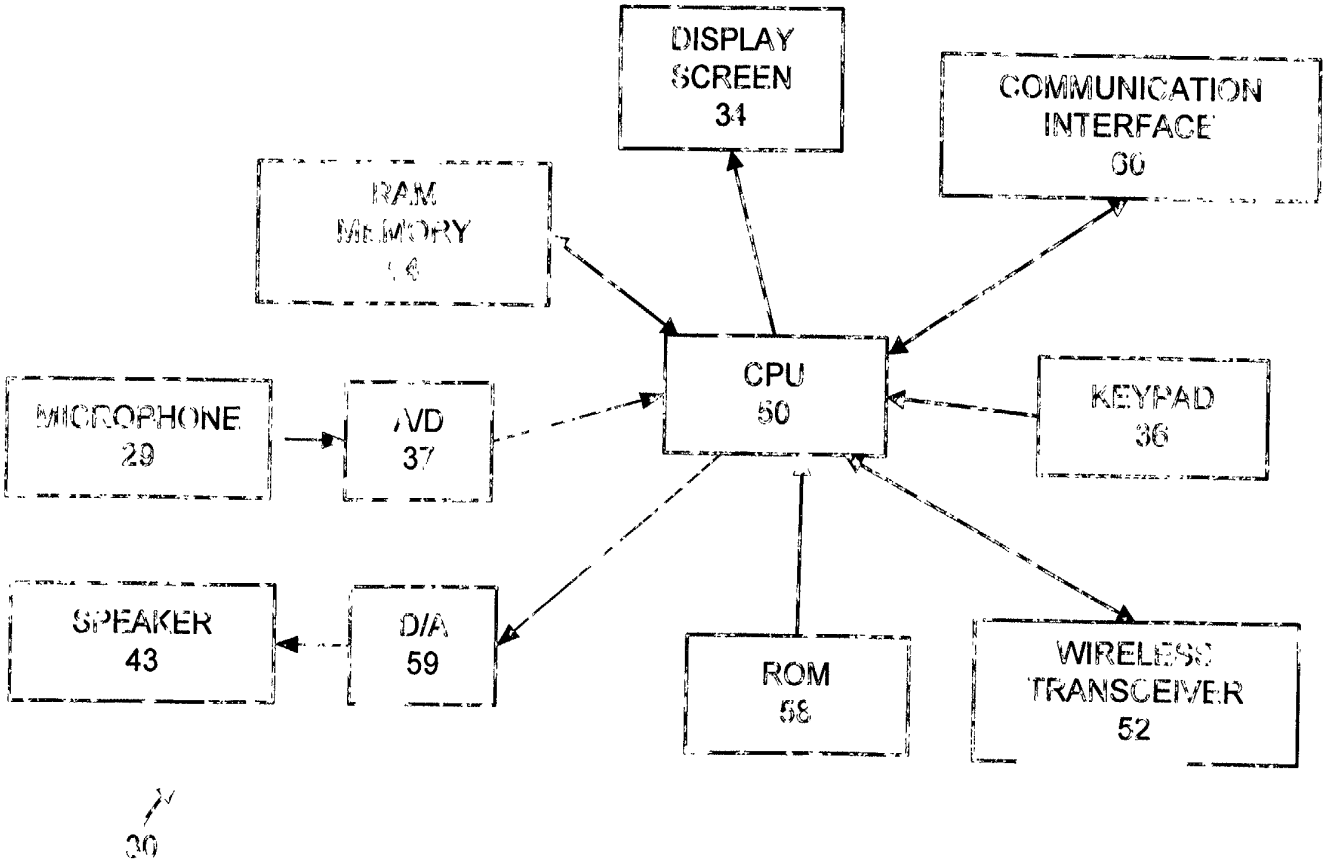
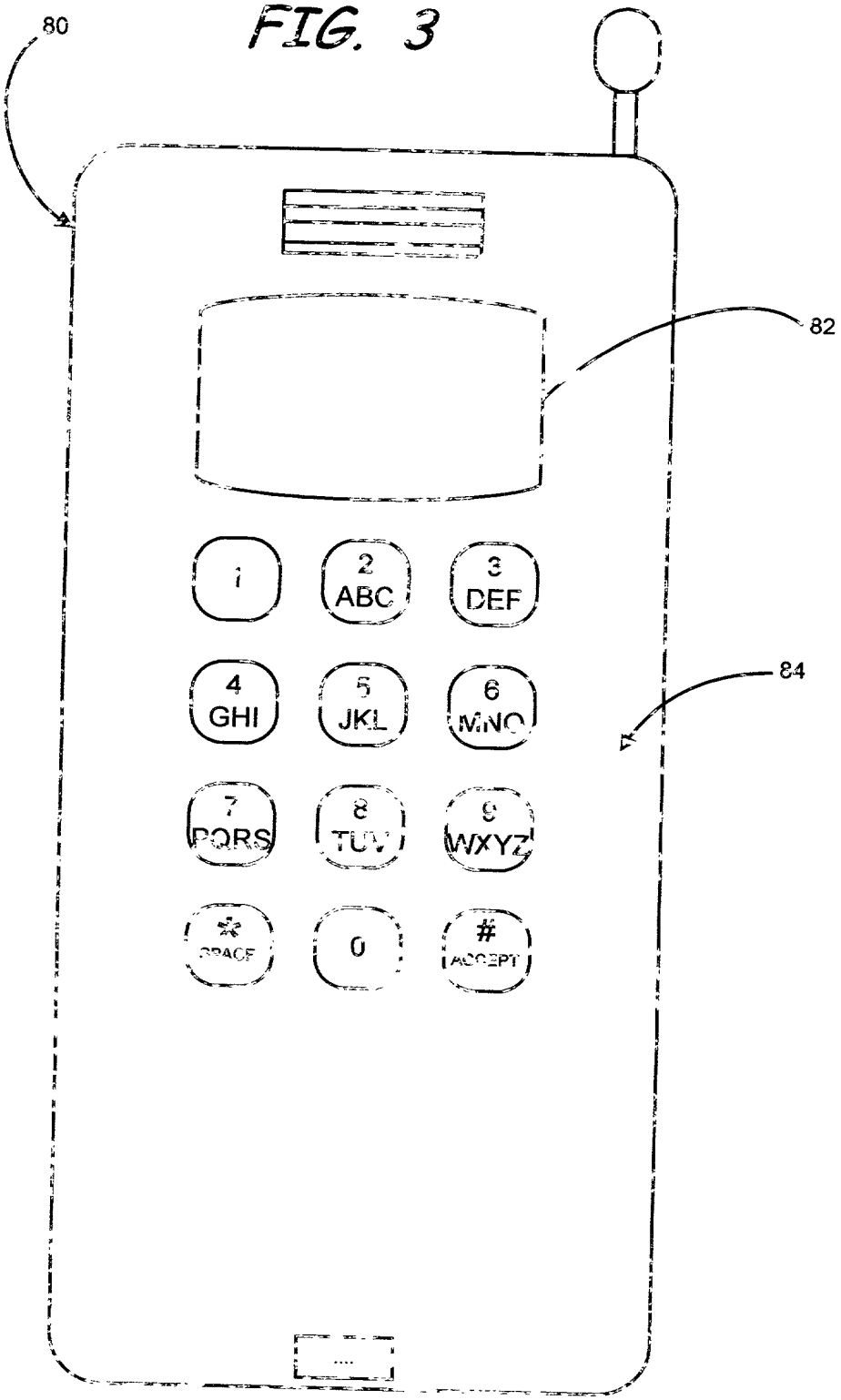

DISPLAY
SCREEN
34
COMMUNICATION
INTERFACE
90
RAM
MEMORY
CPU
50
KEYPAD
36
MICROPHONE
29
A/D
37
SPEAKER
43
D/A
59
ROM
58
WIRELESS
TRANSCEIVER
52
30

FIG.2

FIG. 3



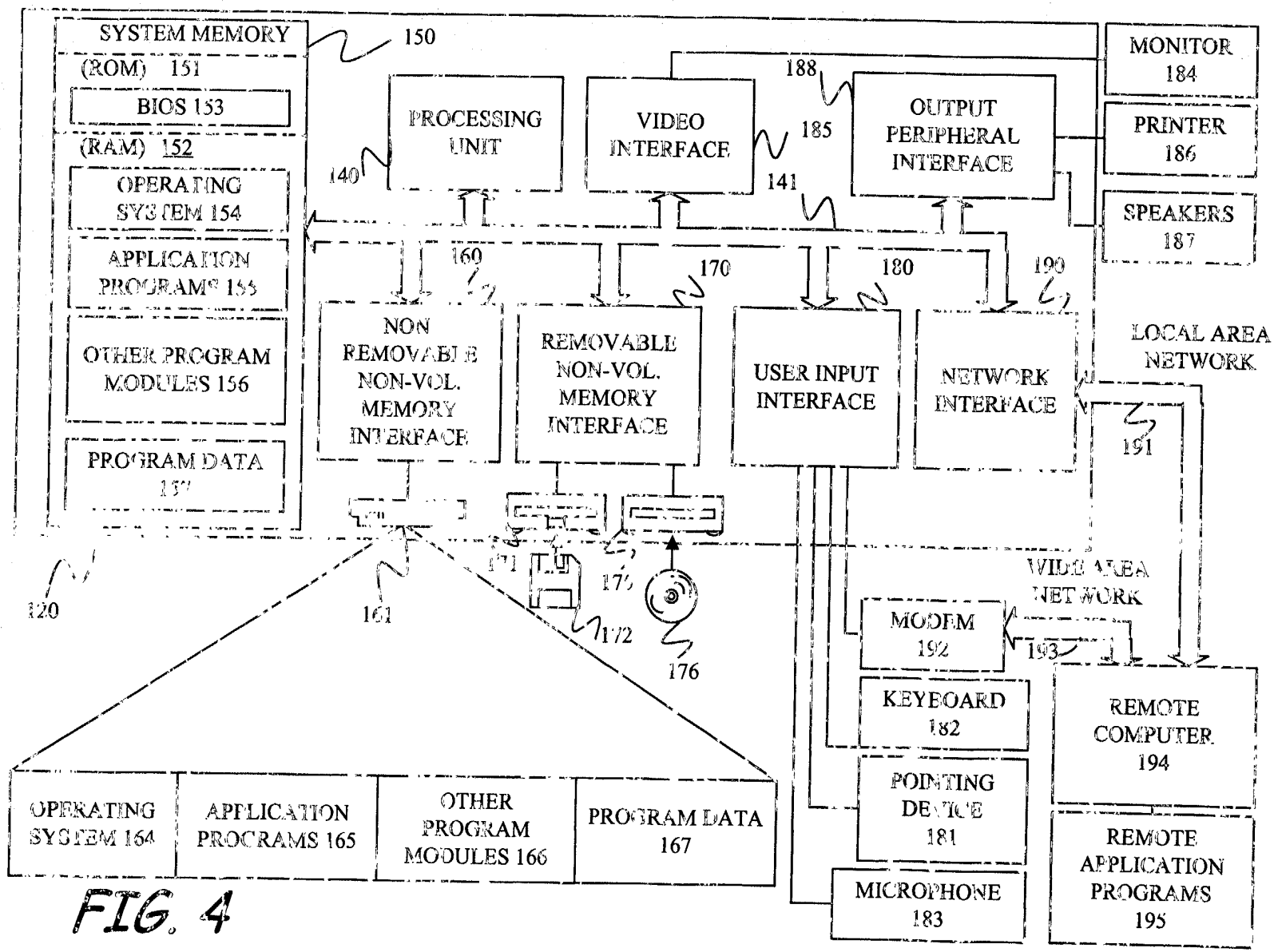

SYSTEM MEMORY
150
(ROM) 151
BIOS 153
(RAM) 152
OPERATING SYSTEM 154
APPLICATION PROGRAMS 155
OTHER PROGRAM MODULES 156
PROGRAM DATA 157
PROCESSING UNIT
140
VIDEO INTERFACE
185
188
OUTPUT PERIPHERAL INTERFACE
141
MONITOR 184
PRINTER 186
SPEAKERS 187
160
170
180
190
NON REMOVABLE NON-VOL. MEMORY INTERFACE
REMOVABLE NON-VOL. MEMORY INTERFACE
USER INPUT INTERFACE
NETWORK INTERFACE
LOCAL AREA NETWORK
191
120
161
171
172
173
176
WIDE AREA NETWORK
MODEM 192
193
KEYBOARD 182
POINTING DEVICE 181
MICROPHONE 183
REMOTE COMPUTER 194
REMOTE APPLICATION PROGRAMS 195
OPERATING SYSTEM 164
APPLICATION PROGRAMS 165
OTHER PROGRAM MODULES 166
PROGRAM DATA 167

FIG. 4

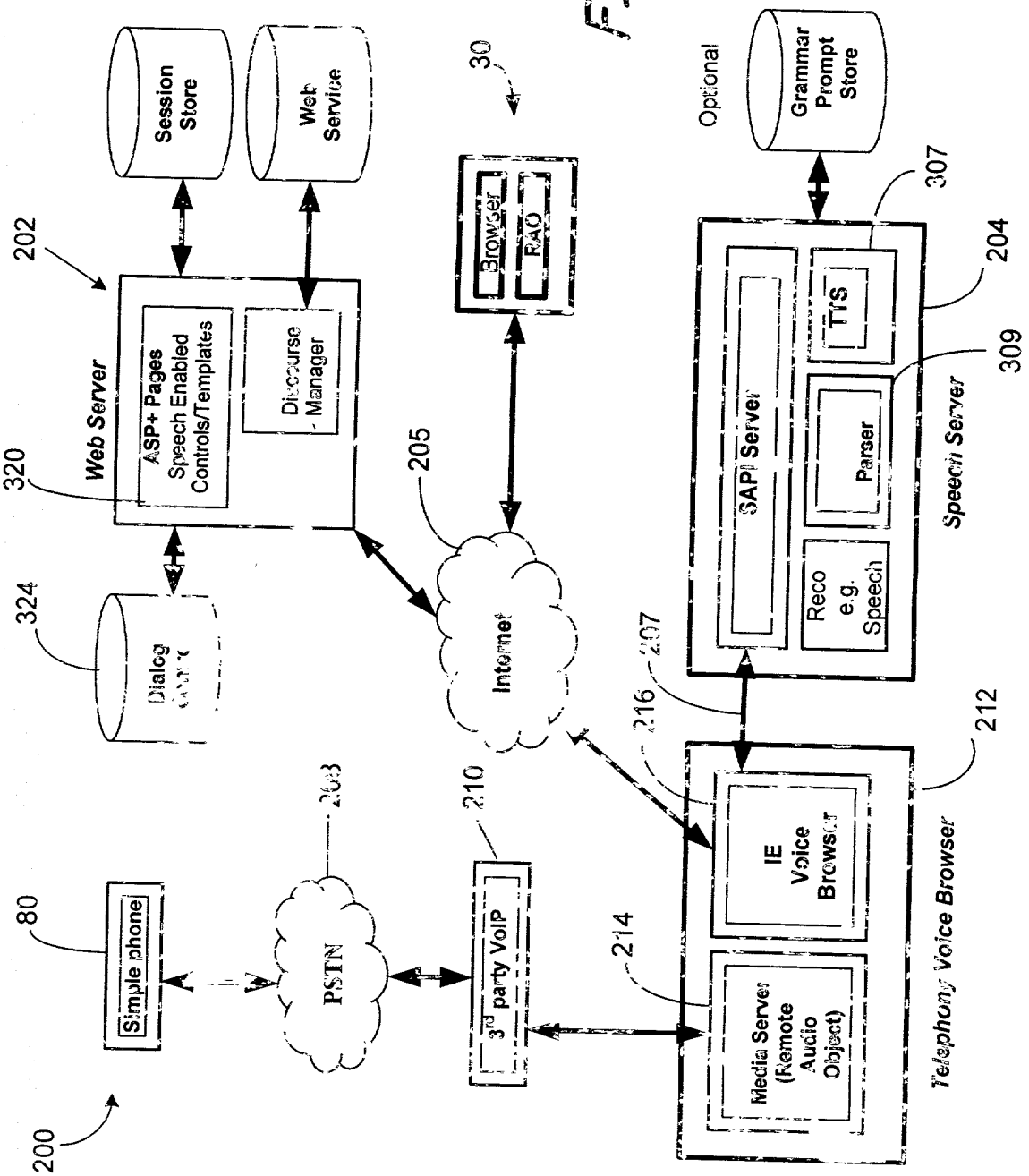

200
80
Simple phone
PSTN
203
3rd party VoIP
210
214
Media Server (Remote Audio Object)
IE Voice Browser
Telephony Voice Browser
212
216
207
Internet
205
320
Web Server
ASP+ Pages Speech Enabled Controls/Templates
Discourse Manager
202
Session Store
Web Service
324
Dialog
30
Browser
RAO
Optional
Grammar Prompt Store
307
204
SAPI Server
Reco e.g. Speech
Parser
TTS
309
Speech Server

FIG. 5

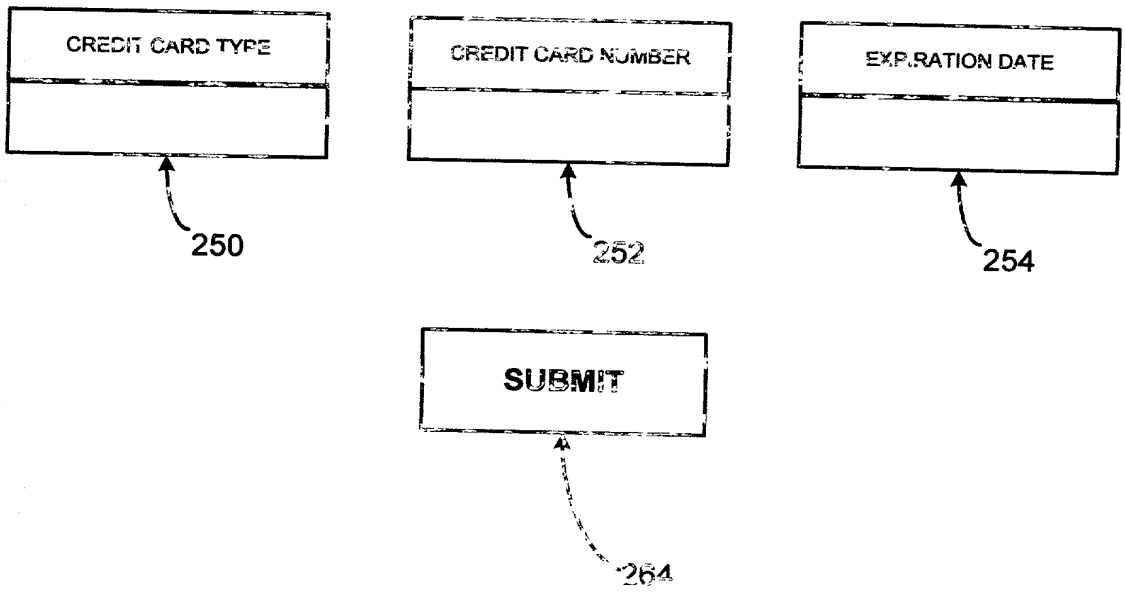
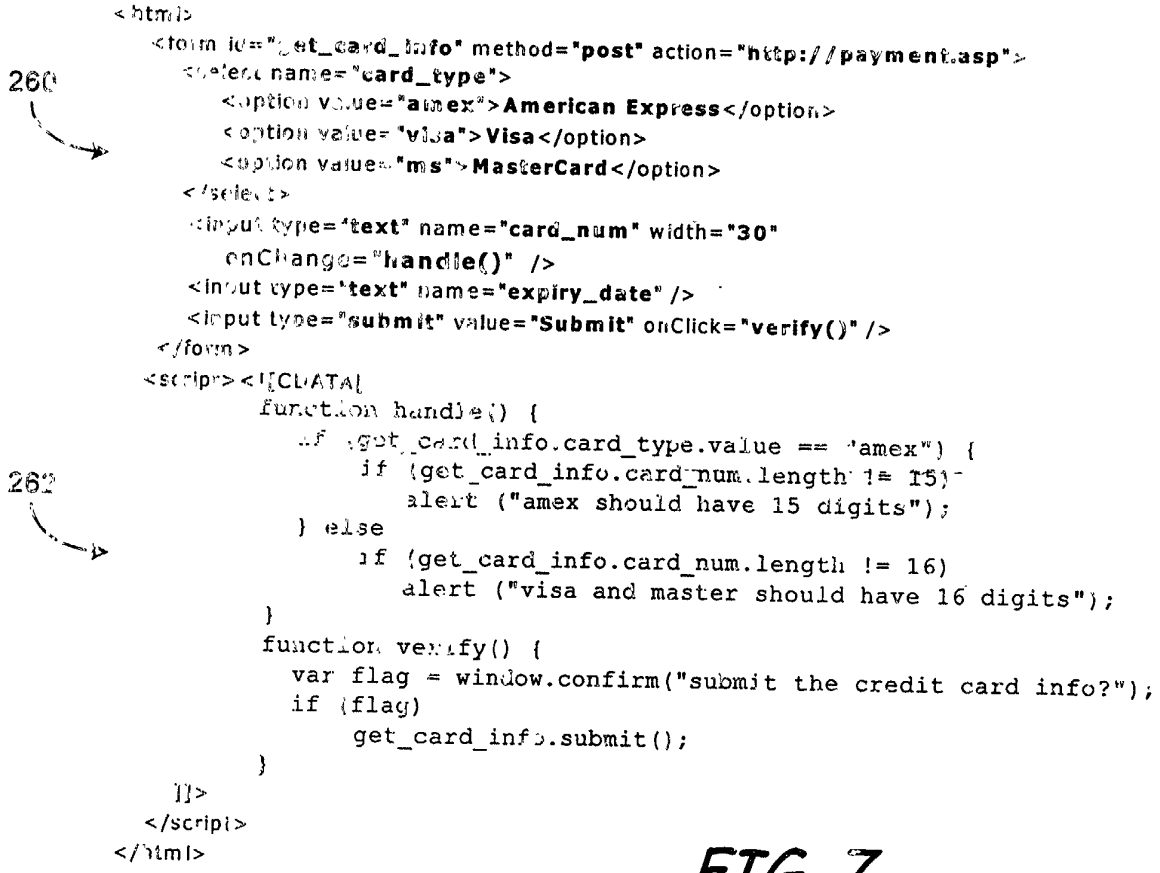

CREDIT CARD TYPE
CREDIT CARD NUMBER
EXPIRATION DATE
250
252
254
SUBMIT
264

FIG. 6




```
<html>
  <form id="get_card_info" method="post" action="http://payment.asp">
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="ms">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30"
      onChange="handle()" />
    <input type="text" name="expiry_date" />
    <input type="submit" value="Submit" onClick="verify()" />
  </form>
  <script><![CDATA[
        function handle() {
          if (get_card_info.card_type.value == "amex") {
              if (get_card_info.card_num.length != 15)
                 alert ("amex should have 15 digits");
          } else
              if (get_card_info.card_num.length != 16)
                 alert ("visa and master should have 16 digits");
        }
        function verify() {
          var flag = window.confirm("submit the credit card info?");
          if (flag)
              get_card_info.submit();
        }
    ]]>
  </script>
</html>
```

FIG. 7

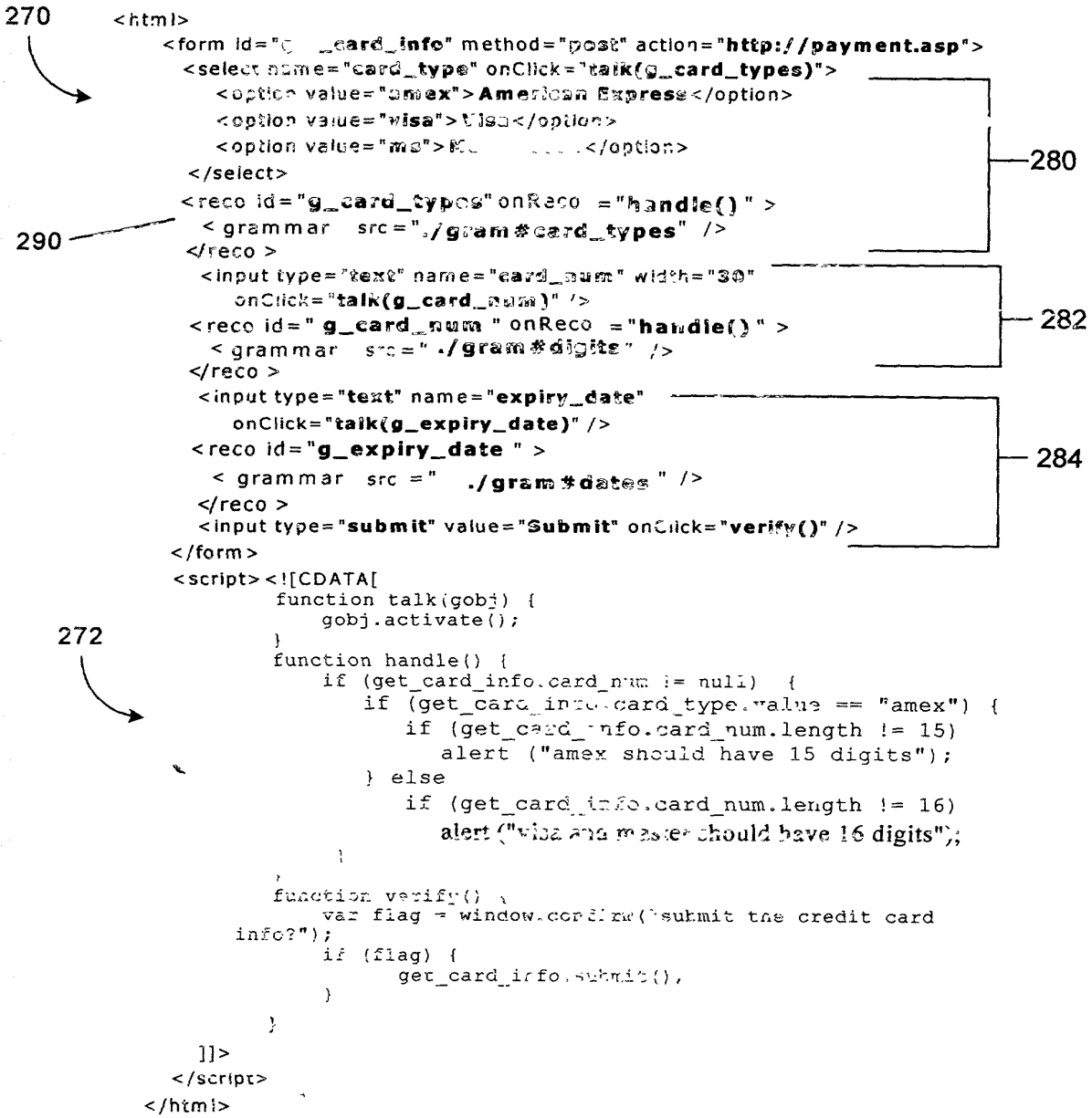


FIG. 8

20030229.5226.69

```
< body >
    < form id =" got_card_info " method =" post" action =" http://payment.asp "
        onActivate =" welcom() ">
     < prompt id =" p_welcome "> We now need your credit card </ prompt >
     < prompt id =" p_mumble "> I didn't understand you </ prompt >
     < prompt id =" p_card_type " bargein =" true "> What credit card would you
use? </ prompt >
     < prompt id =" p_card_num " bargein =" true "> Please say the number" </ prompt >
     < prompt id =" p_expiry_date " bargein =" true "> What is the expiration
date? </ prompt >
     < prompt id =" p_content ">
          I have your  < value select =" card_type " />  < value select =" card_num " />
          with expiration date
        < value select =" expiry_date " />
      </ prompt >
      < prompt id =" p_confirm "> Is this correct? </ prompt >
      < reco id =" g_card_types "      onNoReco  =" mumble(this, 2) " >
       onReco  =" _handle(this, card_type) " />
      < grammar src =" ./gram#card_types "
      </reco >
      < reco id =" g_card_num " onNoReco  =" mumble(this, 1) ">
       onReco  =" _handle(this,  card_num) " />
        < grammar src =" ./gram#digits " />
      </reco >
      < reco id =" g_expiry_date " onNoReco  =" mumble(this, 1) ">
       onReco  =" _handle(this, expiry_date) " audio =" rao " />
        < grammar src =" ./gram#dates " />
      </reco >
     < reco id =" confirmation "    onReco     =" confirmed(this) " />
        < grammar src =" ./gram#yesno " />
      </reco >
      < select name =" card_type ">
          < option value =" amex "> American Express </ option >
          < option value =" visa "> Visa </ option >
          < option value =" ms "> MasterCard </ option >
        </ select >
        < input type =" text" name =" card_num " width =" 30 " />
        < input type =" text" name =" expiry_date " />
        < input type =" submit" value =" Submit " />
    </ form >
   < script ><![CDATA[
          function welcome() {
            p_welcome.active();
            repeat = 0;
            checkFilled();
          }
            function mumble(qcbi, maxprompts) {
             gobj.deactivate();
             p_mumble.active();
             checkFilled();
          }
```

300

303

305

302

TO FIG. 9B

FIG. 9A

20020194388

```
function _handle() {
 handle();
 checkFilled();
}
 function checkFilled() {
   if (card_type.value == "") {
          p_card_type.active();
           g_card_types.activate(); return;
  }
   if (card_num.value =="") {
          p_card_num.active(); g_card_num.acti   vate(); return;
  }
   if (expiry_date.value == "") {
           p_expiry_data.active(); g_expiry_date.activate(); return;
  }
    p_content.activate();
  p_confirm.activate();
  confirmation.activate();
}

 function confirmed(gobj) {
          if (gobj.recogRes.text == "yes")
                 get_card_info.submit();
 }
 //
 // user codes start here
 //
 function handle() {

   if (get_card_info.card_type == "amex") {
      if (get_card_info.card_num.length != 15) {
         prompt.speak ("amex should have 15 digits");
         get_card_info.card_num = "";
      }
   } else
      if (get_card_info.card_num.length != 16)  {
         prompt.speak ("visa and master should have 16 digits");
         get_card_info.card_num = "";
      }
 }
]]>
</script>
</body>
```

FIG. 9B

```
<body>
    <form id="g...  ...C_info" method="post" action="http://payment.asp"
      onactivate  ...me()">
      <prompt ...  ...come">We now need your credit card</prompt>
      <prompt id="...  ...le">I didn't ...rstand you</prompt>
      <prompt id="p_...  ...ype" bargein="...e">What credit card would you
use?</prompt>
      <prompt id="p_...  ...d_num" bargein="true">Please say the number</prompt>
      <prompt id="p_...  ...ry_date" bargein="true">What is the expiration
date?</prompt>
      <prompt id="p_content">
        I have your <value select="card_type" /><value select="card_num" />
    with expiration date <value select="expiry_date" />
      </prompt>
      <prompt id="p_confirm">Is this correct?</prompt>
      <reco id="g_get_card_info" onReco="_handle()" onNoReco ="mumble(this)">
        <grammar  src  ="./gram/getPayment" />
        <bind target="card_type" value="/card/type" />
        <bind target="card_num" value="/card/number" />
405 ——  <bind target="expiry_date" value="/card/expr_date" />
      </reco>
      <reco id="confirmation" onReco ="confirmed(this)  onNoReco ="mumble(this)" />
        <grammar src ="./gram#yesno"/>
      </reco >
      <select name="card_type">
        <option value="amex">American Express</option>
        <option value="visa">Visa</option>
        <option value="ms">MasterCard</option>
      </select>
      <input type="text" name="card_num" width="30" />
      <input type="text" name="expiry_date" />
      <input type="submit" value="Submit" />
    </form>
    <script><![CDATA[
        function wel...  ...() {
          p_welcome...  ...ive();
          repeat = 0;
          ch...  ...ed();
        }
        function mu...  ...e(gobj) {
          gobj.deactivate();
          p_mumble.active();
          check...  ...led();
        }
        function _handle() {
          handle();
          checkF...  ...led();
        }
```

FIG. 10A

TO FIG. 10B

20050256715

```
        function checkFilled()  {
            if (card_type.value == "") {
                p_card_type.active(); do_field.activate(); return;
            }
            if (card_num.value == "") {
                p_card_num.active(); do_field.activate(); return;
            }
            if (expiry_date.value == "") {
                p_expiry_data.active(); do_field.activate(); return;
            }
            p_content.activate();
            p_confirm.activate();
            confirmation.activate();
        }
        function confirmed(gobj) {
            if (gobj.recogRes.text == "yes")
                get_card_info.submit(genxml());
        }
        //
        // user codes start here
        //
          function handle() {
            if (field == get_card_info.card_num) {
               if (get_card_info.card_num.length != 15) {
                  prompt.speak ("amex should have 15 digits");
                  get_card_info.card_num = "";
               }
            } else
               if (get_card_info.card_num.length != 16)  {
                  prompt.speak ("visa should have 15 digits");
                  get_card_info.card_num = "";
               }
        }
          function genxml() {
                str = '<xml><credit_card type="';
                str += card_type.value; str += '"><number>';
                str += card_number.value; str += '</number><expire>';
                str += expiry_date.value; str +=
'</expire></credit_card></xml>';
                return str;
        }
    ]]>
  </script>
</body>
```

FIG. 10B

SAMPLE ASP+ PAGE

```
<%@ Page language="Jscript" AutoEventWireup="false" Inherits="Credit.Transaction" %>
<html><head>
<!-- ASPX page for both voice-only & multimodal credit card example -->
<script>
function handle() {
        if (field == get_card_info.card_num) {
           if (get_card_info.card_num.length != 15) {
             prompt.speak ("amex should have 15 digits");
             get_card_info.card_num = "";
           }
        } else
           if (get_card_info.card_num.length != 16)  {
             prompt.speak ("visa should have 15 digits");
             get_card_info.card_num = "";
           }
      }
function gensml() {
      str = '<sml><credit_card><card_type>';
      str += card_type.value; str += '</card_type><number>';
      str += card_number.value; str += '</number><expire>';
      str += expiry_date.value; str += '</expire></credit_card></sml>';
      return str;
}
</script>
<script runat="server">
function Page_Load (obj, args) {
      if (PostBack) {
         validator = new System.Speech.SMLValidator("./CreditSDL.xml");
         dsml = validator.Evaluate(args);
         Navigate(ChoosePage(dsml));
      } else {
        // initialize fields with args
      }
}
</script>
</head>
<body>
<speech:form id="get_card_info" style="system_initiative"
      prompt="  /prompt/getPayment" onsubmit="gensml()">
  <speech:choice name="card_type" prompt="What credit card would you use?"
      grammar="./gram#card_types" onPhraseFinish="handle()"
      <option>American Express</option>
      <option>Visa</option>
      <option>Mastercard </option>
  </speech:choice>
  <speech:textbox name="card_number" prompt='Please say the number"
      grammar="./gram#digits" onPhraseFinish="handle()">
  <speech:textbox name="expiry_date" prompt="What is the expiration date? "
      grammar="./gram#dates" onPhraseFinish="handle()"/>

</speech:form>
</body>
</html>
```

FIG. 11

9950220 v 020202

FIG. 12

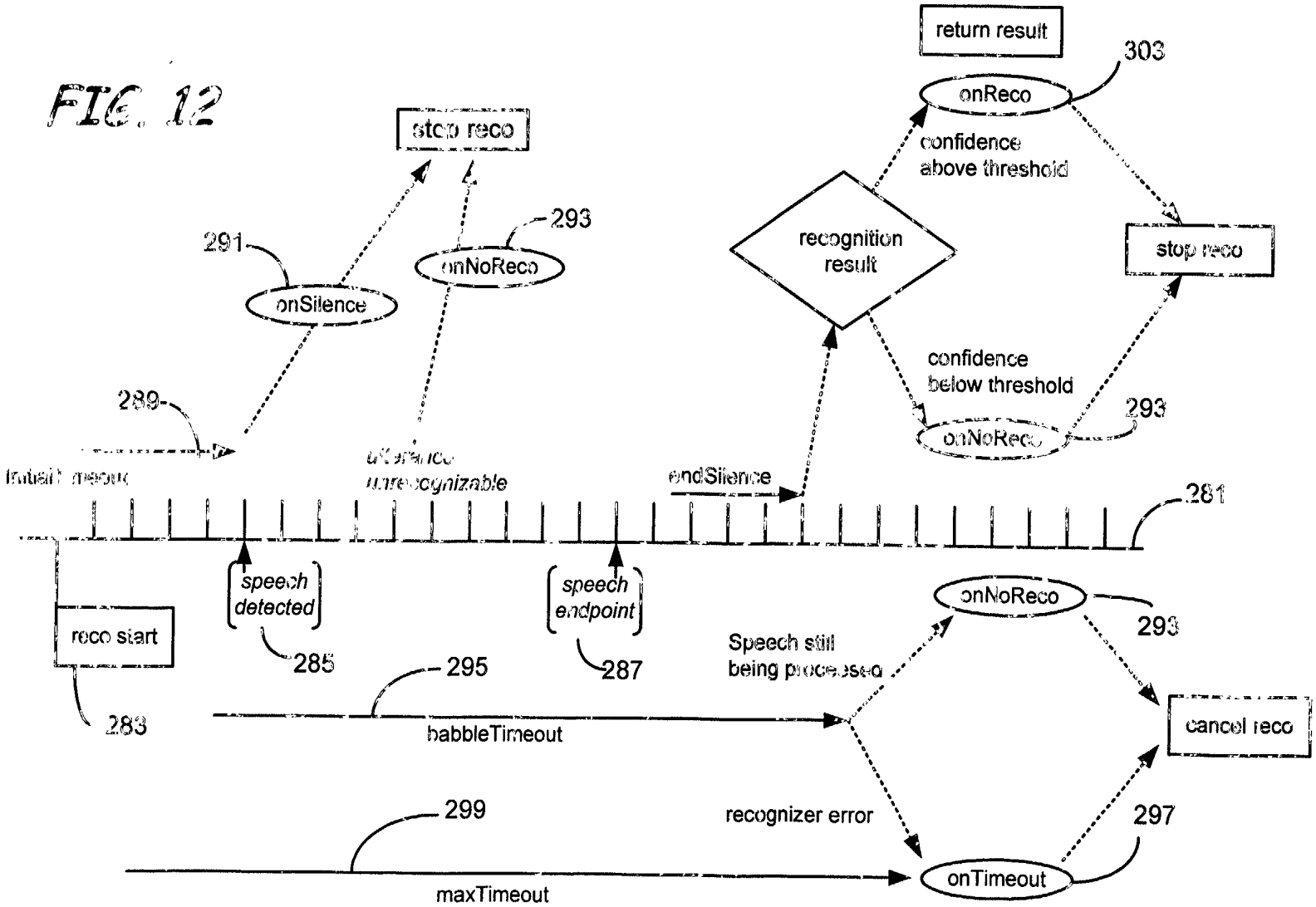

return result
303
onReco
confidence
above threshold
stop reco
293
291
onNoReco
onSilence
recognition
result
confidence
below threshold
289
onNoReco
293
endSilence
281
speech
detected
speech
endpoint
reco start
285
287
onNoReco
293
Speech still
being processed
295
283
babbleTimeout
cancel reco
299
recognizer error
297
onTimeout
maxTimeout

FIG. 13

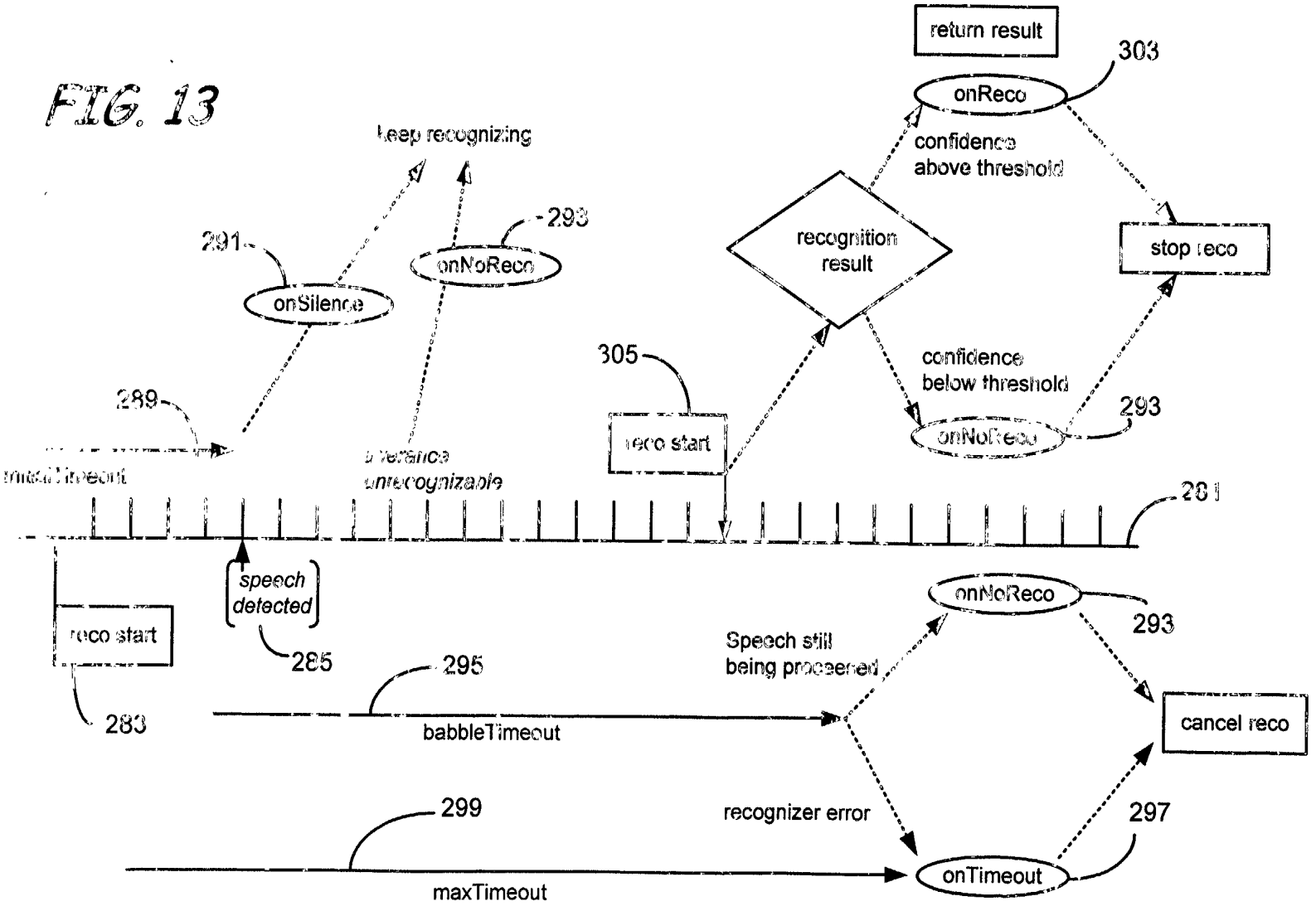
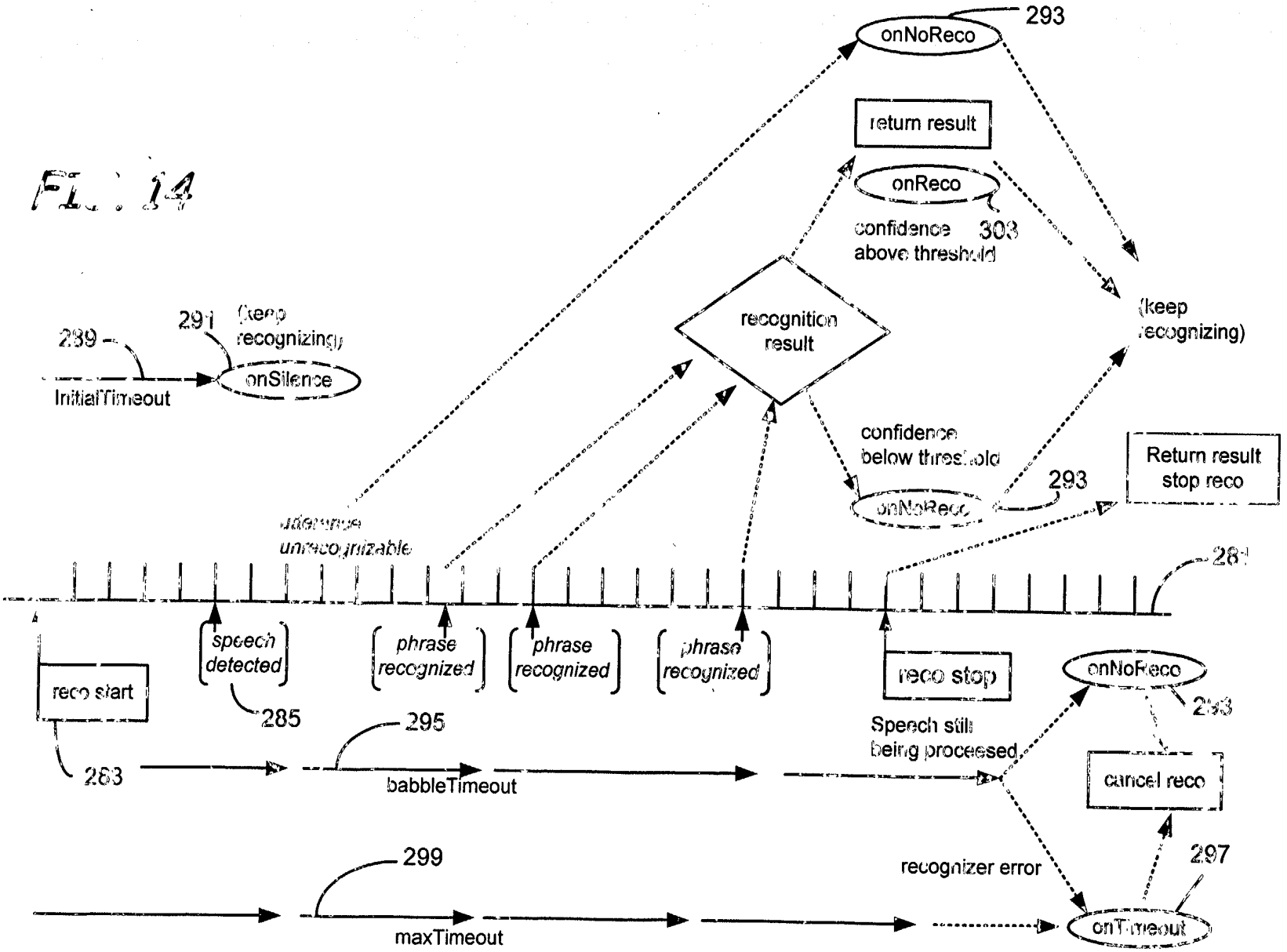

return result
303
onReco
confidence above threshold
Keep recognizing
293
291
onNoReco
onSilence
recognition result
stop reco
305
confidence below threshold
289
293
onNoReco
reco start
281
speech detected
285
onNoReco
293
reco start
Speech still being processed
295
cancel reco
283
babbleTimeout
299
recognizer error
297
onTimeout
maxTimeout

FIG. 14


293
onNoReco
return result
onReco
confidence above threshold
303
recognition result
(keep recognizing)
291
(keep recognizing)
289
onSilence
InitialTimeout
confidence below threshold
Return result stop reco
293
onNoReco
utterance unrecognizable
281
speech detected
phrase recognized
phrase recognized
phrase recognized
reco start
285
reco stop
onNoReco
283
295
babbleTimeout
Speech still being processed
cancel reco
299
maxTimeout
recognizer error
297
onTimeout